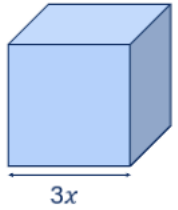
Holy Family Catholic School – Faculty of Mathematics Autumn Half-term 1 Year 10H

Learning Intention	Vocab	Concept	Retrieval	Success Criteria	Hinge Questions	Red Zone
Week 1 (Thurs & Fri) - ORIENTATION & EXPECTATIONS						
Week 2 Lesson 1 To simplify expressions. Step 1	Expression Simplify Variable Like terms Unlike terms	ALGEBRA	Direct Proportion Probability Solve fractional equation. Factors.	I will be able to: • Simplify expressions.	Slide 20 Simplify $\frac{15pq^2}{3q}$ Which is the correct answer? A $\frac{5p}{q}$ B $5pq$ C $5p^2$ D $\frac{15pq}{3}$	Slide 23 Here is a cube.  Show that the surface area of the cube is $54x^2$.
Week 2 Lesson 2 To use laws of indices. Step 2		ALGEBRA	Simplify Two way table. Pythagoras. Product of prime factors.	I will be able to: • Use the laws of indices.	Slide 22 Write $(10g^4)^2$ as a single power. Which is the correct answer? A $100g^6$ B $10g^8$ C $50g^8$ D $100g^8$	Slide 27 $4^{x+1} \times 4^{13-3x} = 4^{19}$ Work out the value of x.

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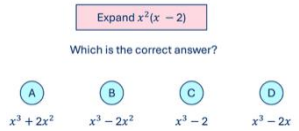
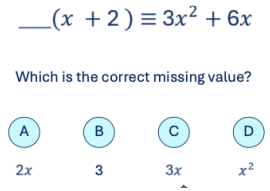
Week 2 Lesson 3 To expand a single bracket. Step 3	Expand Coefficient Expression Index	ALGEBRA	Simplify algebraic fraction. Relative frequency. Pythagoras. HCF	I will be able to: • Expand a single bracket.	Slide 22 	Slide 26 Expand the brackets. a) $\frac{1}{2}(4q+12)$ c) $\frac{3}{4}(5t-8)$ b) $\frac{1}{5}(4d+5)$ d) $\frac{2}{3}h(2-5h)$
Week 2 Lesson 4 To factorise into a single bracket. Step 4	Factorise Coefficient HCF Index	ALGEBRA	Expand single bracket. Expectation. Pythagoras HCF of three numbers.	I will be able to: • Factorise into a single bracket.	Slide 10 	Slide 19 Factorise the expression fully. $8x^2+12xy+16x^2y$ Slide 20 Factorise the expression fully. $8x^2+12xy+16x^2y$

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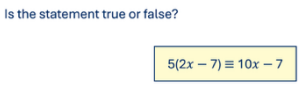
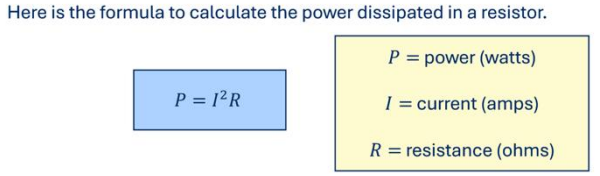
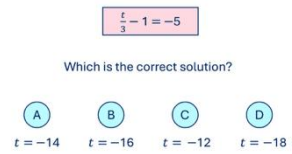
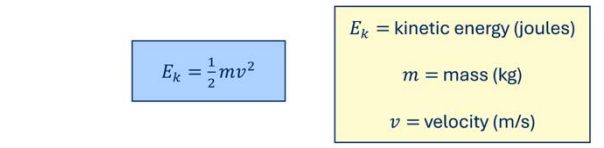
Week 3 Lesson 1 Review Assessment task						
Week 3 Lesson 2 To solve equations. Step 1	Equation Inverse Expression Unknown Solution	ALGEBRA	Factorise linear Probability Pythagoras HCF	I will be able to: • Solve equations involving brackets • Set up and solve equations linked to a different area of maths.	Slide 17 	Slide 20 
Week 3 Lesson 3 To solve fractional equations. Step 2	Expression Unknown Solution	ALGEBRA	Solve equation with brackets. Simplify algebraic fraction. Pythagoras	I will be able to: • Solve fractional equations.	Slide 19 	Slide 27 

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			Simplify fractions.			
Week 3 Lesson 4 To solve equations with unknowns on both sides. Step 3	Expression Unknown Solution	ALGEBRA	Solve equation with fraction. Laws of indices. Substitution Multipliers	I will be able to: • solve equations with unknowns on both sides.	Slide 26 Is the statement true or false? $2(e+7) \equiv 2e+7$	Slide 29 Solve the equations. a) $x^2+7x+6=2x$ c) $p^2-7p+20=5p-16$ b) $y^2+2y-25=y-5$ d) $3u^2+5u-15=2u^2+7u$
Week 4 Lesson 1 To understand inequalities Step 4	Integer Satisfy Inequality Compound inequality	ALGEBRA	Solve equation. Expand single bracket. Table of values. Percentage change.	I will be able to: • understand and use inequalities.	Slide 20 p is greater than or equal to 8 Which inequality represents the statement? A $p<8$ B $p\leq 8$ C $p>8$ D $p\geq 8$	Slide 29 Represent the inequalities on the number lines. $a<2$ $b\geq -4$ $c>0$ $d\leq -3$

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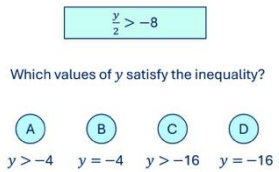
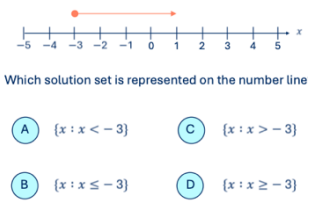
Week 4 Lesson 2 To solve inequalities Step 5	Inequality Satisfy Integers Solve	ALGEBRA	List integers from an interval. Factorise linear. Table of values. Reverse percentage.	I will be able to: • solve inequalities. • represent solution set on a number line.	Slide 14 	Slide 26 Solve the inequalities. a) $2r + 7 \leq 4r - 5$ c) $4m + 1 \geq 5 - m$ b) $5p + 8 < 2p - 4$ d) $10 - 5y > 25 - 3y$
Week 4 Lesson 3 To represent solutions to inequalities using set notation. Step 6	Satisfy Solution set Set notation Union	ALGEBRA	Solve inequality. Solve fractional equation. Read values from quadratic graph. Score as a percentage.	I will be able to: • understand set notation. • represent solutions to inequalities using set notation.	Slide 17 	Slide 27 Solve $-5 < 2x + 1 \leq 3$ Write the solution set using formal set notation.

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Week 4 Lesson 4 To change the subject of a simple formula. Step 7	Formula Subject Rearrange	ALGEBRA	Use set notation. Solve fractional equation. Reciprocal graph. Percentage problem.	I will be able to: • change the subject of a simple formula.	Slide 11 $p + u = y$ What is the subject of the formula? A p B u C y	Slide 20 Make x the subject of the formulae. a) $2x - b = m$ c) $k = a + gx$ b) $tx + h = e$ d) $q = yx + 3n$
Week 5 Lesson 1 To change the subject of a known formula. Step 8	Formula Subject Variable Rearrange	ALGEBRA	Change the subject. Solve equation (both sides) Set notation. Repeated percentage change.	I will be able to: • change the subject of a known formula. • Use this to solve a problem in a different area of maths.	Slide 19 Here is a formula to calculate the area of a trapezium. $A = \frac{1}{2}(a+b)h$ A $2A = (a+b)h$ C $2Ah = a+b$ B $\frac{2A}{h} + b = a$ D $2A - ah = bh$ Which of the rearrangements are correct?	Slide 18 Work out the value of b. $A = \frac{1}{2}bh$ 19 cm b cm area = 228 cm^2

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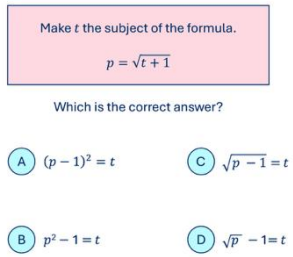
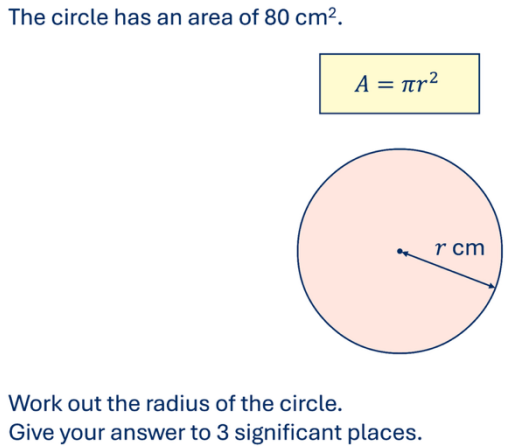
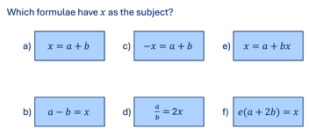
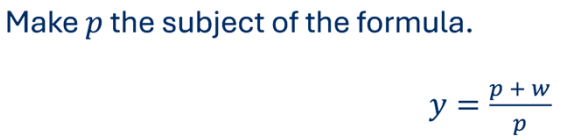
Week 5 Lesson 2 To change the subject of a more complex formula. Step 9	Formula Subject Coefficient Rearrange	ALGEBRA	Change the subject. List integers for an interval. Elements in a venn. Interest calculation.	I will be able to: • change the subject of a more complex formula.	Slide 20 	Slide 23 
Week 5 Lesson 3 To change the subject where the subject appears more than once. Step 10	Formula Subject Expand Factorise	ALGEBRA	Change the subject. Solve equation. Elements in a set. Simple interest.	I will be able to; • change the subject where the subject appears more than once.	Slide 9 	Slide 19 

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Week 5 Lesson 4 Review and assessment task						
Week 6 Lesson 1 To expand double brackets Step 1	Quadratic Expand Term	ALGEBRA	Change the subject. Use set notation. Trigonometry Compound interest.	I will be able to • expand double brackets using the grid method.	Slide 17 Is the statement true or false? $(m-4)^2 = m^2 - 8m - 16$	Slide 27 Expand $(2a + b + c)(a - 5)$ Slide 28 Expand $\left(2 + \frac{6}{x}\right)^2$
Week 6 Lesson 2 To expand triple brackets Step 2	Cubic expression. Binomial Expand	ALGEBRA	Expand double brackets. Change the subject. Trigonometry. Area of a trapezium.	I will be able to: • expand triple brackets using a series of grids.	Slide 19 Is the statement true or false? $x(x+1)(x-1) \equiv x^3 - x$	Slide 20 Expand and simplify $(x + 3)^2 (x - 4)$ Slide 21 Expand and simplify $(x - 5)^3$

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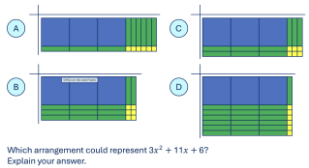
Week 6 Lesson 3 To factorise quadratic expressions. Step 3	Variable Expression Quadratic Factorise	ALGEBRA	Expand triple brackets. Change the subject. Trigonometry Area of a Circle.	I will be able to: • factorise quadratic expressions.	Slide 8 Is the statement true or false? The product of 5 and 6 is 11	Slide 29 Factorise the expressions. a) $x^2 + 4x - 12$ c) $x^2 + x - 20$ b) $x^2 - 13x - 30$ d) $x^2 - x - 6$
Week 6 Lesson 4 To factorise more complex quadratic expressions. Step 4	Variable Expression Quadratic Factorise Coefficient	ALGEBRA	Factorise quadratic Change the subject. Trigonometry. Surface area of a cube.	I will be able to • factorise more complex quadratic expressions.	Slide 9  Which arrangement could represent $3x^2 + 11x + 6$? Explain your answer.	Slide 26 Factorise the expressions. a) $2y^2 + 5y - 3$ c) $5r^2 - 17r + 6$ b) $3u^2 - 10u - 8$ d) $11k^2 - 56k + 5$

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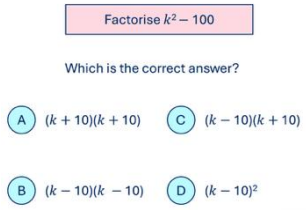
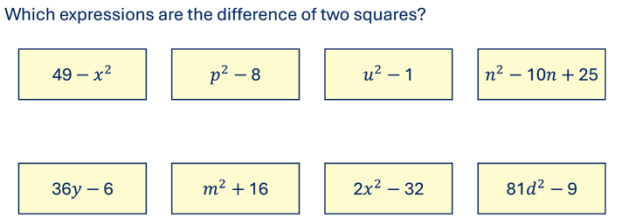
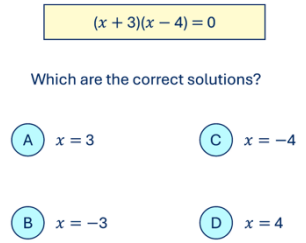
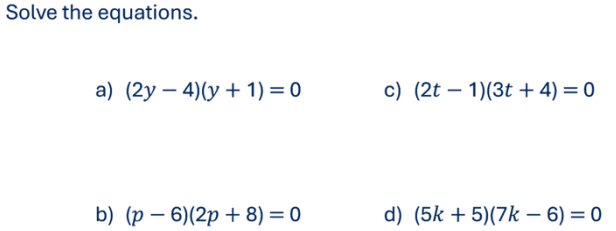
Week 7 Lesson 1 To find the difference of two square. Step 5	Variable Expression Quadratic Factorise	ALGEBRA	Factorise quadratic. Change the subject. Trigonometry. Surface area of a prism.	I will be able to • solve inequalities using a balancing method • to understand the solution.	Slide 17 	Slide 24 
Week 7 Lesson 2 To solve quadratic equations equal to zero. Step 6	Solve Solution Product	ALGEBRA	Difference of two squares. Expand double brackets. Trigonometry. Surface area of a cylinder.	I will be able to: • solve quadratic equations equal to zero and already in factorised form.	Slide 17 	Slide 23 

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Week 7 Lesson 3 To solve quadratics by factorisation. Step 7	Factorise Solution Roots	ALGEBRA	Solve using factorised form. Expand triple brackets. Trigonometry. Volume of a cylinder.	I will be able to • solve quadratics by factorisation.	Slide 13 Is the statement always, sometimes or never true? Quadratic equations have two solutions.	Slide 15 Solve the equations. a) $n^2 - 5n + 6 = 0$ c) $b^2 - 3b - 10 = 0$ b) $p^2 + 6p - 16 = 0$ d) $f^2 - 6f + 9 = 0$
Week 7 Lesson 4 To complete the square. Step 9	Coefficient Constant Quadratic Perfect square	ALGEBRA	Solve quadratic. Factorise quadratic. Trigonometry. Convert metric units.	I will be able to • complete the square for an expression.	Slide 25 $x^2 + 8x + 19 \equiv (x + \square)^2 + 3$ Which is the missing value? A: −16 B: 4 C: 8 D: 16	Slide 34 Write each expression in the form $(x + a)^2 + b$. a) $x^2 + 3x + 5$ c) $x^2 + 5x - 1$ b) $x^2 - 3x + 10$ d) $x^2 - 7x - 9$

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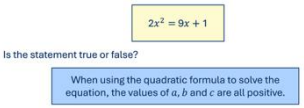
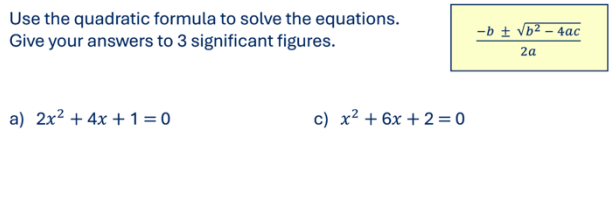
Week 8 Lesson 1 To solve quadratic equations using the quadratic formula. Step 12	Solve Solution Substitute Discriminant	ALGEBRA	Solve quadratic Trigonometry Solve equation (unknown on both sides)	I will be able to: • confidently know how to substitute into the quadratic formula. • Solve a quadratic using the formula.	Slide 30 	Slide 35 
Week 8 Lesson 2 Review and assessment task						
Week 8 Lesson 3 Review and consolidation						
Week 8 Lesson 4 Review and consolidation						